CANON FTb

Similar models: other pre-A series Canon SLRs

Battery: 1 PX-13

Fig. 1 — top cover removed

Fig. 2 — back of camera, rewind side

Fig. 3 — back of camera, wind side

Fig. 4 — bottom cover removed

Fig. 5 — front view, mirror box removed

ADJUSTMENT LOCATIONS

Meter, low-light	A
Metering-limits indicator	B
Free movement, meter linkage	C
Battery test	D
Meter, high-light	E
Meter, mid-range	F
Shutter-speed indicator	G
First-curtain brake	H
Shutter speed — 1/125-1/1000	I
Overtravel, release	J
Travel time, second curtain	K
Travel time, first curtain	L
Overtravel, mirror-lifting mechanism	M
Overtravel, first-curtain latch	N
Overtravel, retard gear	O
Shutter speed — 1/30-1/8	P
Shutter speed — 1/4-1 second	Q

ADJUSTMENT VALUES

Curtain travel time: 11.5 - 12.8 (32mm distance)

Flange-focal distance: 42.14mm 0.02mm (flange to pressure-plate rails)
41.9mm ± 0.02mm (flange to film-rails)

Battery test: needle to just enter lower corner of battery-test square with 1.3V applied

Meter linkage: *set ASA 100, 1/1000 second*
The timing hole in the meter gear segment should align with the timing dimple in the geared rack. One slot in the coupling disc should now face the front of the camera.

set ASA 100, 1/4 second
The exposure-meter needle should be within the lower metering-limits indicator on the focusing screen.

set ASA 100, 1/2 second
The red metering-limits indicator should move fully into the finder half way between 1/4 second and 1/2 second.

set largest lens aperture (f/1.8 or f/1.4)
The circle at the end of the pointer should overlap the corner of the lower metering-limits indicator on the focusing screen with the f/1.4 lens. The pointer should center between the lower metering-limits indicator and the battery-test square with the f/1.8 lens.

Overtravel:

a. Retard gear. There should be a 0.2 - 0.3mm space gap between the drive lug on the retard gear and the edge of the retard lever in the speeds escapement with the shutter cocked. Adjust by shifting the position of the drive lug (adjustment 0).

b. Mirror-lifting lever. During the cocking cycle, when the diaphragm-charge lever has moved its maximum distance in a clockwise direction, there should be a 0.1 - 0.2mm space gap between the latch on the mirror-tensioning lever and the tab on the mirror-lifting lever. The overtravel assures that the latch always drops into engagement. With insufficient overtravel, the mirror fails to move to the taking position; with excessive overtravel, the mirror may not move all the way up. Adjust by shifting the position of the latch (adjustment M).

c. First-curtain latch. After cocking the shutter, allow the wind lever to return slowly as you watch the first-curtain wind gear. The first-curtain wind gear should rotate 0.1 - 0.2mm before it's engaged and held by the first-curtain latch. Insufficient overtravel could result in the curtains being released before the mirror rises. To adjust, loosen the nut under the lip of the body casting and rotate the eccentric under the first-curtain latch (adjustment N).

ADJUSTMENT SEQUENCE, SHUTTER SPEEDS:

1. Adjust the eccentric at the back of the camera (I in Fig. 3) for the fast speeds 1/125 through 1/1000. If necessary, you can also change the rotational position of the release cam. Adjusting the release cam requires removing the speed-control mechanism plate. Use the release-cam adjustment for the speeds of 1/1000 second and 1/500 second; use the eccentric for 1/250 second and 1/125 second.
2. Adjust the retard speeds of 1/30, 1/15, and 1/8 (adjustment P).
3. Adjust the pallet speeds of 1/4, 1/2, and 1 second (adjustment Q). If necessary, you can also shift the position of the upper bearing plate of the retard rod as a slow-speed adjustment. Adjust the bearing plate to correct 1/4 second.

ADJUSTMENT SEQUENCE, METER LINKAGE:

1. Set the engagement between the meter gear segment and the meter rack so that the timing marks on the two parts align with one another and with the center of the screw holding the meter rack. As you're holding the parts with the timing marks aligned, the linkage is at the ASA 100, 1/1000 second position.
2. Continue holding the linkage with the timing marks aligned. Then seat the coupling disc with one of its four slots facing the front of the camera. The four slots in the coupling disc are slightly offset. So, if one slot doesn't point

directly to the front of the camera, use another slot. Normally, one of the four slots is marked with a scribe or a dab of colored lacquer; this is the slot used by the factory.

3. Adjust the position of the idler gear (adjustment C) so that the linkage moves freely and without backlash.

4. Again hold the linkage with the timing marks aligned. Replace the speed knob at the settings of ASA 100 and 1/1000 second.

5. Set ASA 100, 1/4 second. Adjust the position of the lug on the meter rack (B) until it just touches the control lever of the red metering-limits indicator. When you turn the speed knob to 1/2 second, the red metering-limits indicator should enter the finder.

6. Adjust the position of the pointer (see "Adjustment Values") using the eccentric inside the mirror box (rewind side).

ADJUSTMENT SEQUENCE, EXPOSURE METER:

1. Work back and forth among adjustments A, E, and F to adjust the accuracy.

Light level	*Settings*	*Adjustment*
EV4	ASA 100 1/8 second f/1.4	Eccentric A, or neutral-density filters in front of CdS cell
EV10	ASA 100 1/30 secor f/5.6	Variable resistor B
EV15	ASA 100 1/1000 second f/5.6	Variable resistor C

2. Adjust battery test. Variable Resistor A

DISASSEMBLY HIGHLIGHTS:

Control positions: shutter speed — 1/1000 second film speed — ASA 25

Location of left-hand threads:
screw holding control lever for red warning-lights indicator
screw holding pawls for tension-setting ratchets
tension-setting ratchets

Sequence:
1. bottom cover and top cover
2. disconnect cord from speed-indicator pulley (FTb-N model only)
3. remove three screws and lift out pentaprism assembly
4. lift CdS cell from slot in focusing screen
5. disconnect the ends of the two green wires at the front of the galvanometer (FTb-N model only)
6. remove tripod socket
7. remove two screws (three in some cameras) holding the black extension arm that passes to the front of the mirror box to engage the diaphragm control of the lens; lift out the extension arm toward the front of the mirror box
8. remove front-plate leatherette (it's not necessary to completely remove the leatherette on the wind-lever side; just peel back the leatherette far enough to reach the front-plate screws — one at each corner and one just below the self-timer lever)
9. remove five front-plate screws
10. lift out front-plate/mirror-box assembly (self-timer coupler will be loose)

REASSEMBLY HIGHLIGHTS

1. Place the self-timer coupler in position on the self-timer escapement. Then, using a large screwdriver in the slot of the self-timer coupler, fully cock the escapement. Also move the self-timer lever on the front plate to the cocked position. Now replace the front-plate/mirror-box assembly. As yet, the assembly won't seat fully. Cock the shutter and depress the release rod. As the self timer runs down, it will pick up and turn the self-timer lever. The front-plate/mirror-box assembly then seats properly.

2. Before connecting the cord to the speed-indicator pulley, apply two full turns of initial tension to the spring. Rotate the speed-indicator pulley in a counterclockwise direction to apply the initial tension.

3. Replace the speed knob at the settings of ASA 100 and 1/1000 second. First rotate the coupling disc until its marked slot faces the front of the camera. Then, while holding the coupling disc in position, seat the speed knob. The pin on the underside of the speed knob then passes through the slot that faces the front of the camera.

4. If you remove the shutter-speed mechanism plate, replace the plate with the shutter in the cocked position. Otherwise, the X-sync contact on the first-curtain brake lever will be on the wrong side of the X-sync contact on the shutter-speed mechanism plate.

TROUBLESHOOTING:

Behavior without battery: needle remains at bottom of screen

Photocell resistance (front of photocell held against light source):
- between green wire and red wire — 137 ohms
- between black wire and green wire — 1.81K Values approximate,
- between black wire and red wire — 1.69K depending on color code.

Galvanometer resistance: 2.91K

FREQUENTLY REPAIRED SECTIONS

a. Erractic second curtain movement, resulting in side-to-side exposure variation. Normally caused by dirty ball race at upper end of second curtain winding roller. Clean the ball race, lubricate with shutter oil.

b. Erratic first curtain movement, resulting in side-to-side variation and in intermittent X-sync operation. Normally caused by dirty lower bearing for the curtain-wind

shaft. Clean the bearing, lubricate with shutter oil.

c. Curtain bounce. The brake shoe at the end of the first-curtain brake lever may be worn or, more likely, completely missing. To replace the brake shoe, remove the two screws at the back of the camera which hold the brass support for the brake spring. Then lift the support high enough to reach the nylon trip of the first-curtain brake lever. Cement a section of felt or Canon's replacement part to the nylon tip.

d. Curtains return to the released position if the wind lever is allowed to return before completing the wind stroke. The one-way clutch spring at the bottom of the camera (above the sprocket gear) is weak or deformed. Replace the spring.

e. Diaphragm fails to stop down. The latch on the diaphragm-charge lever isn't dropping into engagement with the tab on the diaphragm-closing lever at the end of the cocking stroke. Reform the tab on the diaphragm-closing lever or the long, curved end of the diaphragm-charged lever to increase the overtravel.

f. No meter operation, either on normal or on battery test. The symptom could indicate a problem with the battery connections or an open glavanometer coil. But it's often the result of the battery-test switch shorting to ground. Check for direct continuity between the long blade of the battery-test switch and the body casting. Continuity normally indicates that the switch blade is touching the rewind-shaft housing.

g. Shutter delivers 1 second at the 1/8-second setting. The pallet is not disengaging, causing slow exposure at 1/30, 1/15, and 1/8. Indicates that the arm at the bottom of the pallet rod has come loose from its stake. Replace the pallet rod or attach the lower arm with super glue. Requires major disassembly to remove the pallet rod.

h. No sync operation at accessory shoe. In the FTb-N model, the safety switch at the back of the front plate probably isn't making good contact. The safety switch should be closed until the flashcord-terminal cover is moved aside to connect a flashcord. Opening the safety switch breaks the contact to the accessory shoe.

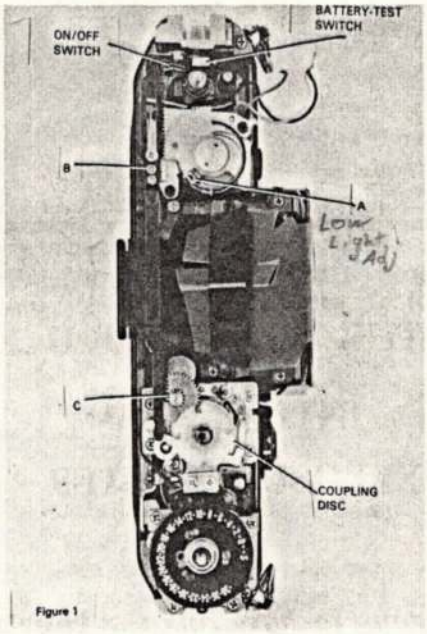


Figure 1

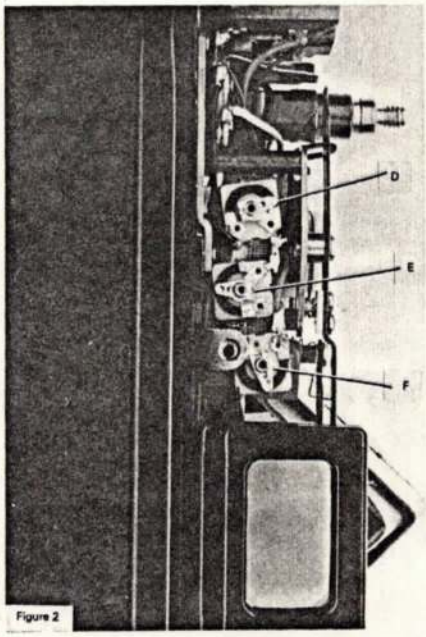


Figure 2

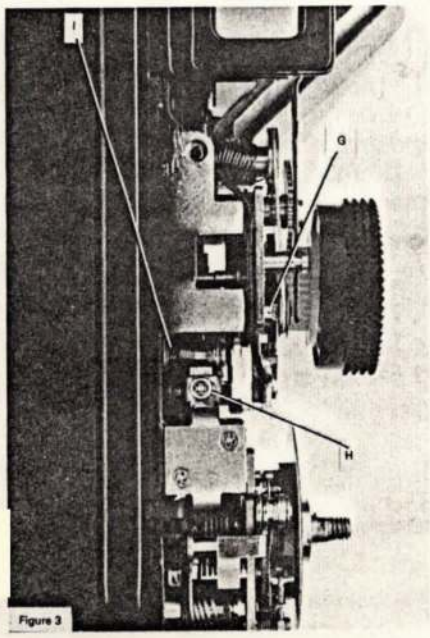


Figure 3

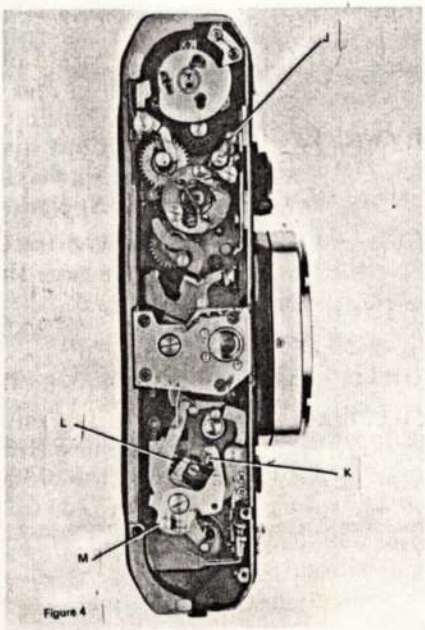


Figure 4

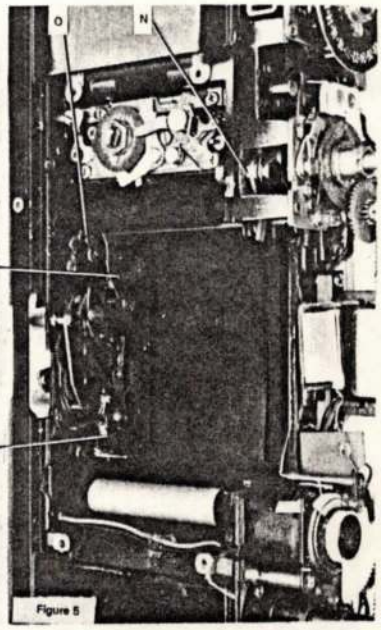


Figure 5

i. Release button can't be depressed, or you can feel a "catch" when depressing the release button. Indicates that the slot in the transport cam at the bottom of the camera fails to align properly with the arm at the bottom of the release shaft. Check to see if the screw holding the stop cam at the upper end of the curtain-wind shaft has worked loose. You can reach the screw with the shutter in the cocked position with the self-timer escapement removed.

j. Counter window in top cover comes loose, may jam wind mechanism.

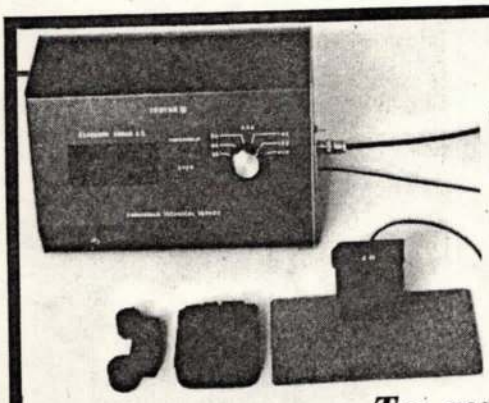
OTHER COMMENTS:

a. Galvanometer, resistor board, and CdS cell may be replaced individually. Note color code at back of CdS cell.

b. Curtain tension rollers, lower mechanism plate, and tension-setting ratchets come as a complete assembly.

c. Revised parts:
   a. Reset gear and retard gear (two gears next to speeds escapement) may be either brass or plastic. Not interchangeable.
   b. Charge gear (bottom of camera) may be either nylon or brass. Interchangeable.
   c. Coupling disc and idler gear for meter coupling may be either nylon or brass. Interchangeable.

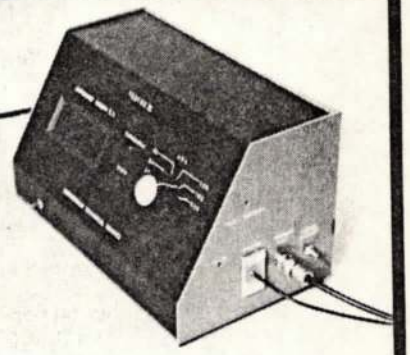
d. Replacing the sprocket requires almost complete disassembly because of the QL system.



THE ZTS TESTER II

INTEGRATED

EXPOSURE TESTER



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